

Perspectives on Biofuels

2011 Kentucky Agricultural Summit – Bioenergy Symposium

Louisville

November 17, 2011



**Marathon
Petroleum Company LP**

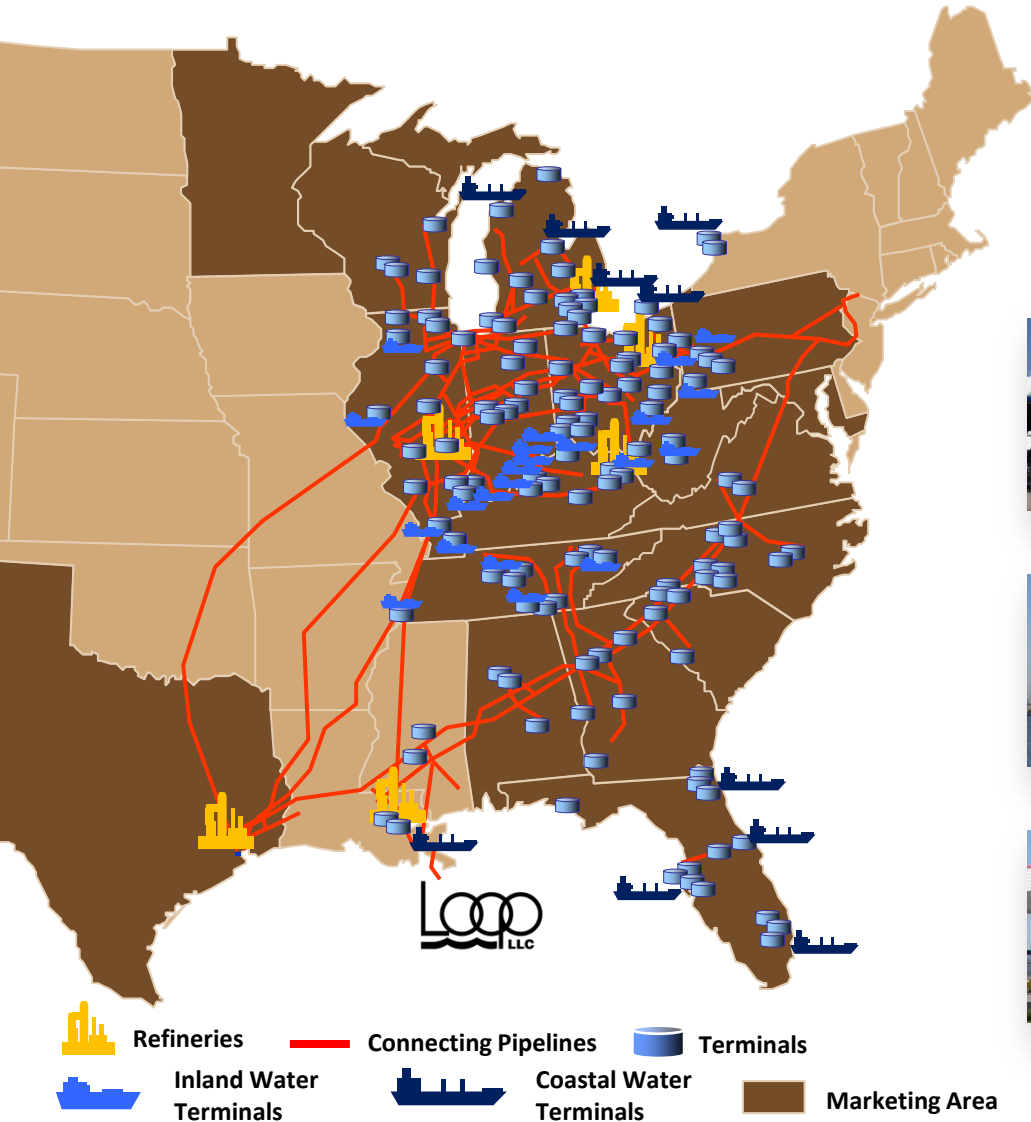


Marathon Petroleum Corporation



- More than 120 years in business
- 5th largest U.S. refiner
 - Geographically and strategically aligned operations
 - Industry leader emphasizing safety and environmental responsibility
 - Major refining investments nearly complete
 - Consistently a top performer on an operating income per barrel basis
 - Characterized by safe and reliable operations
- Focused on profitable growth

Focused and Integrated Network



Refineries



Terminals



Pipelines



Coastal Water Terminals



Inland Water Terminals



Speedway



Brand Marketing

MPC's Speedway and Marathon Brand Network

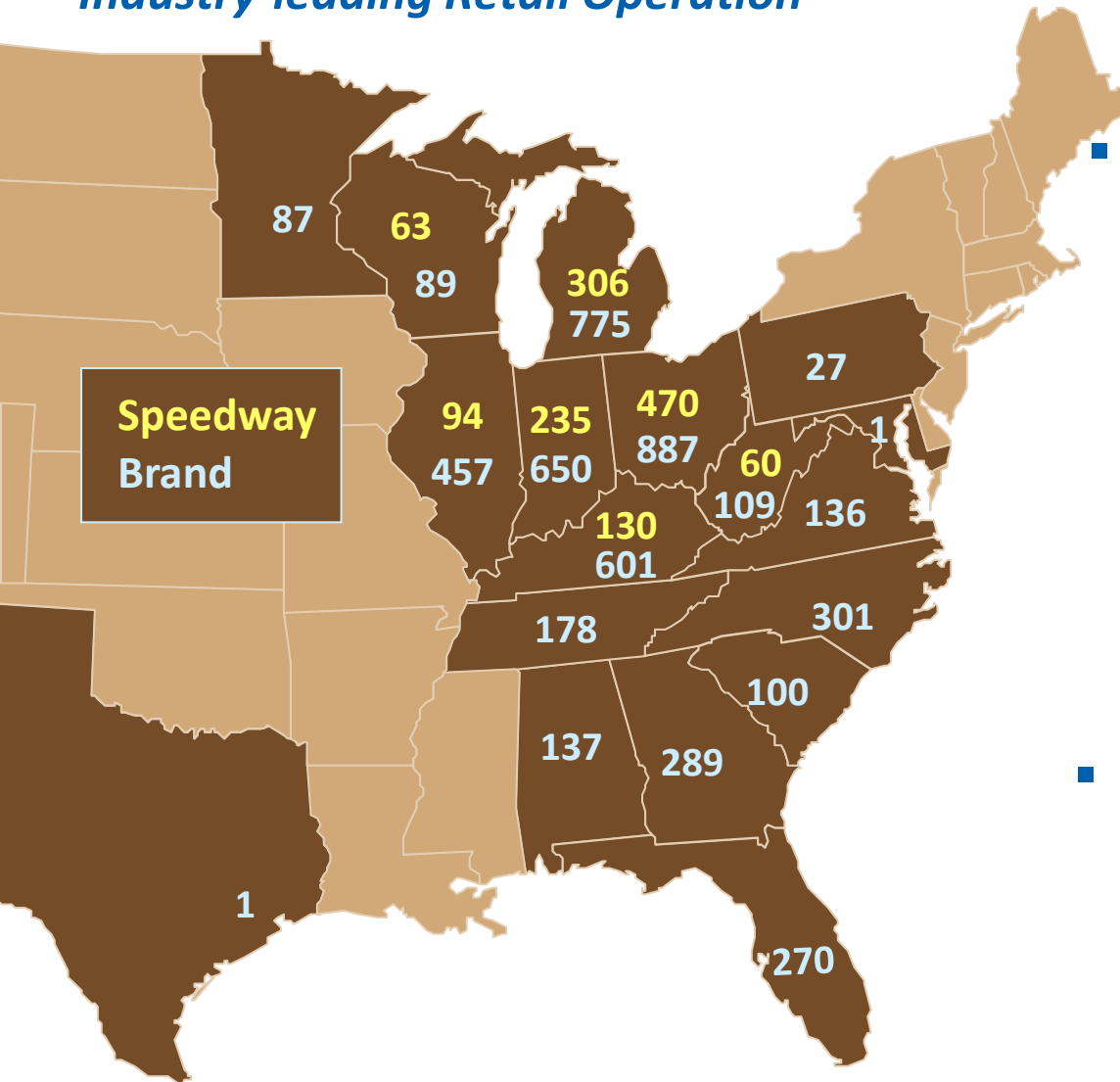
Industry-leading Retail Operation



- **Speedway:**
 - 4th largest U.S. owned/operated c-store chain
 - ~1,375 stores
 - ~2.0 million customers/day
 - Located in 7 states



- **Marathon Brand gasoline:**
 - Independent entrepreneurs
 - ~5,100 branded locations
 - Located in 18 states



Store counts as of 12/31/10



The Drivers – The Case for Biofuels

Two Mantras:

- Energy independence and security
- Climate change and carbon management

Legislation:

- Energy Policy Act of 2005:
 - Established Renewable Fuel Standard (RFS-1) starting at 4 billion gallons a year in 2006 and going to 7.5 billion gallons a year in 2012
- Energy Independence and Security Act of 2007
 - Renewable Fuel Standard (RFS-2) requirements, February 2010
 - Compliance - Renewable Identification Numbers (RINs) and trading
- Farm policy - strong support by agricultural state senators
- State legislation and mandates

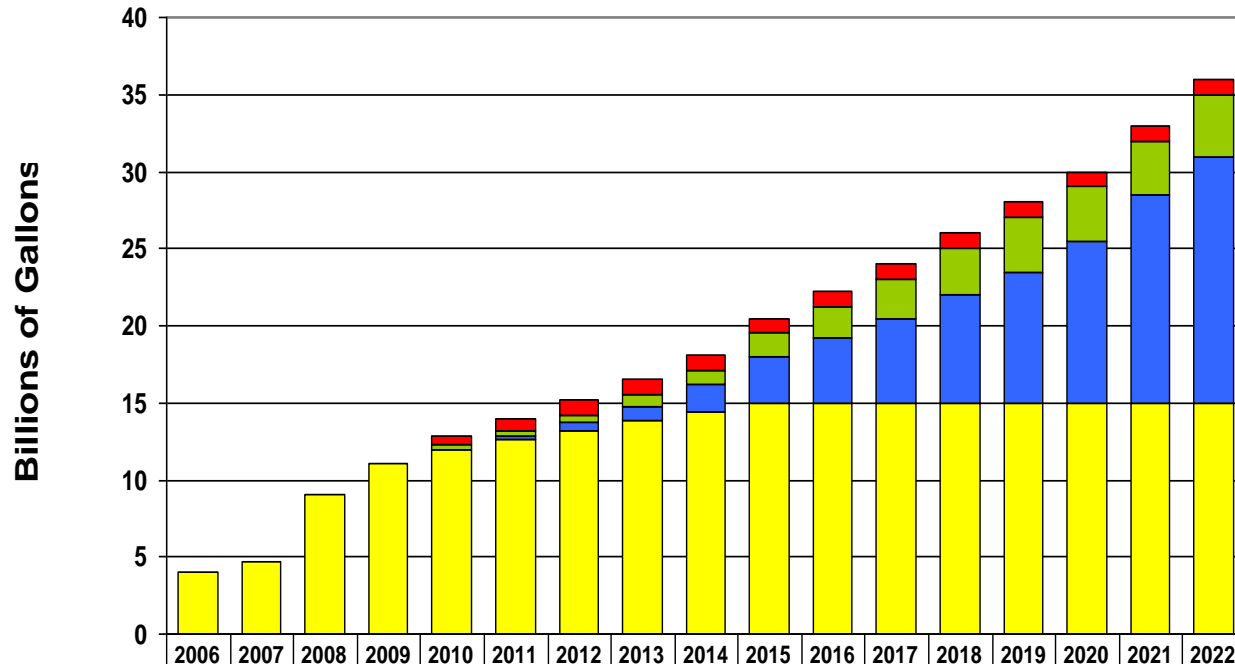
Financial Incentives:

- Volumetric Ethanol Excise Tax Credit of 51¢ per ethanol gallon, reduced to 45¢, - will likely be eliminated
- Import tariff of 54¢ per gallon – will be reviewed at year-end 2011



Energy Independence and Security Act of 2007

Renewable Fuel Standard (2007-2022)



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
■ Biomass-Based Diesel					0.55	0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
■ Non-Cellulosic Advanced					0.30	0.30	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	3.50	3.50	4.00
■ Cellulosic Advanced					0.005	0.25	0.50	1.00	1.75	3.00	4.25	5.50	7.00	8.50	10.50	13.50	16.00
■ Conventional Biofuels	4.00	4.70	9.00	11.10	12.00	12.60	13.20	13.80	14.40	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00

Biomass-based Diesel

50% reduction in GHG emissions

Biodiesel, standalone renewable diesel

Non-cellulosic Advanced

50% reduction in GHG emissions

Ethanol, biodiesel, renewable diesel (except corn starch-based ethanol)

Cellulosic Advanced

60% reduction in GHG emissions

Cellulose, hemicellulose, or lignin

Conventional Biofuels

20% reduction in GHG emissions

Corn-based ethanol

MPC Ethanol Equity Positions

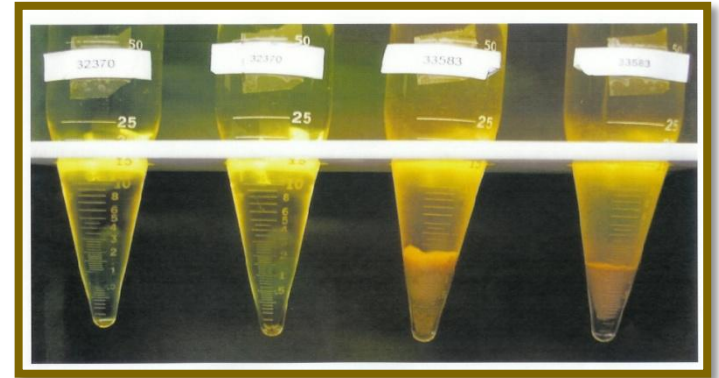


- 50% equity interest in ethanol plant, Greenville, Ohio
- 36% equity interest in ethanol plant, Clymers, Indiana
- Our partners are The Andersons and Mitsui - Andersons operates the plants and provides services to them, such as corn origination, natural gas purchasing, DDGS marketing, ethanol marketing
- Looking to increase the profitability of these 110 mmgy, ICM-built, corn-based ethanol plants by:
 - Adding corn oil separation technology at both plants
 - Evaluating co-generation using dried distiller's grains (DDGS)
 - Evaluating cellulosic ethanol technology – corn cobs, corn stover
 - Evaluating biodiesel production capability
 - Evaluating algae plant – pure stream of CO₂ an advantage
 - Selling E-85 – introduced at Clymers, about to be introduced at Greenville
 - Selling CO₂ at Greenville to Continental Carbonic
- ~\$13 million investment in cellulosic ethanol developer Mascoma Corp.

MPC Biodiesel Activities

- Currently blending soy-based biodiesel at 4 MPC terminals:

- Champaign, Robinson, and Mt. Prospect, Illinois
- Louisville, Kentucky



- Making capital investment at Kenova to blend along the Ohio River – scheduled for completion by year-end 2011

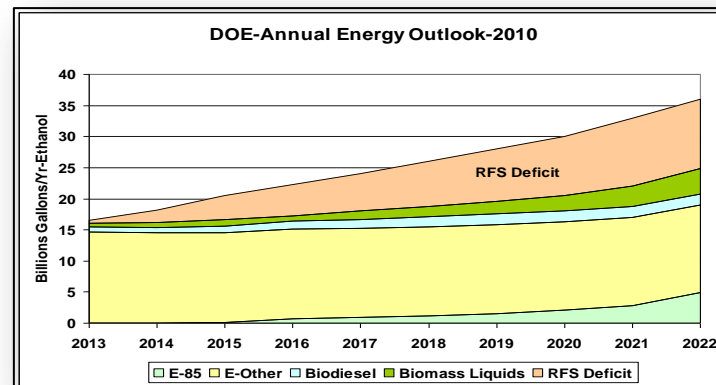
- Cincinnati, Covington, Louisville, Charleston, Marietta, Midland, Hugheston, Columbus, Lexington and Viney Branch

- Secured capacity to blend into the Taft system in Florida and the Plantation system in the Southeast



Current Challenges

- High uncertainty on evolving policy:
 - Will RFS survive or undergo major changes?
 - Ethanol GHG footprint under debate – Indirect Land Use Change (ILUC):
 - ILUC included in RFS2 regulations for biofuels
 - Controversial, emerging science and a political football
 - Whole carbon footprint debate on biofuels is wide open
 - Food versus fuel debate
 - Emissions properties under debate with pending ozone regulations
 - Cap and Trade, LCFS, future climate legislation potential impact
 - CAFÉ fuel efficiency standards – 54.5 mpg by 2025



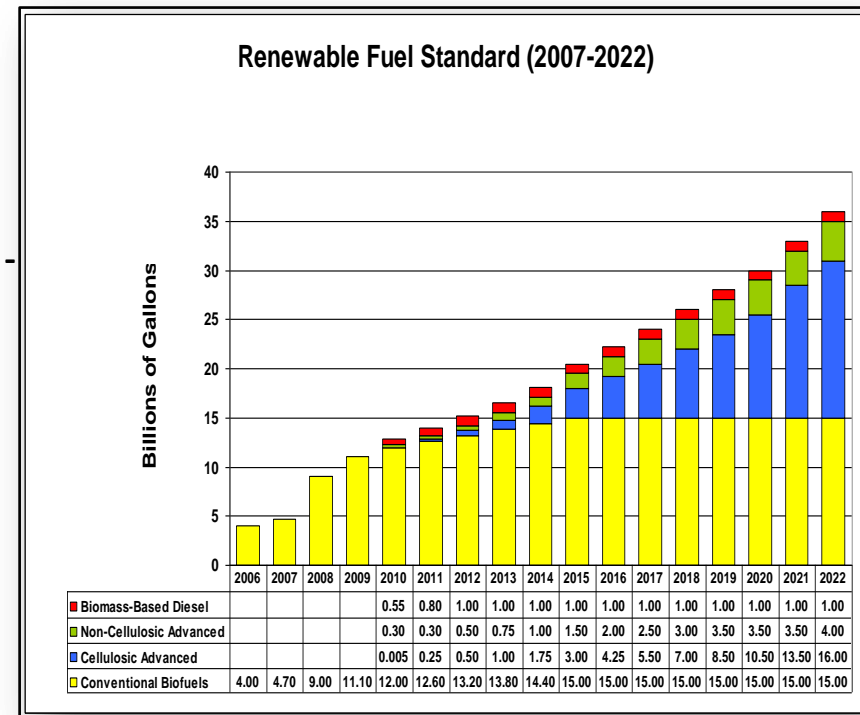
Current Challenges

■ Current RFS has technical and practical issues preventing its implementation as written:

- 16 billion gallons cellulosic ethanol required by 2022 - right now there is effectively none
- Average plant size may be 20-30 mmgy
- Equates to 500+ plants to be constructed in 10-11 years
- Government will continue to be compliance vehicle of last resort

■ Higher blends needed, but many issues:

- Slow take-up of flex-fuel vehicles for E-85
- E-15 allowed for use in vehicles from 2001:
 - EPA facing legal challenge from Outdoor Power Equipment Institute regarding non-road engines
 - E-15 not yet certified by Underwriters Laboratory
- Pumping, labeling, forecourt issues
- Regulatory and specification requirements



Achieving Commercial Scale – Three Significant Factors

■ Feedstock:

- Supply – investors looking for long-term agreements
- Collection – harvesting
- Storage
- Transportation

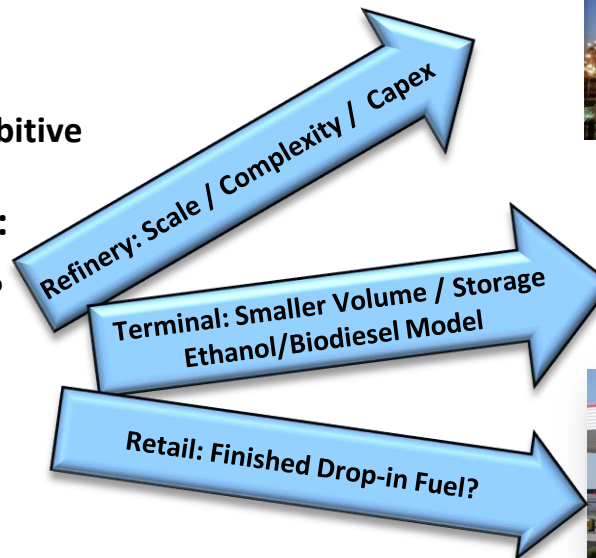
■ Conversion:

- Technology – will it work at scale with economically viable results?
- EPC contractor
- Plant design and size
- Pre-treatment
- Capex – currently prohibitive

■ Distribution of Products:

- Where to take product?
- Supply agreements
- Pricing:
 - Wet product value
 - RIN value

Refinery	Barrels per Day	Gallons per Day
Canton, OH	78,000	3.3 million
Catlettsburg, KY	212,000	8.9 million
Detroit, MI	106,000	4.5 million
Garyville, LA	464,000	19.5 million
Robinson, IL	206,000	8.7 million
Texas City, TH	<u>76,000</u>	<u>3.2 million</u>
Total	1,142,000	48.0 million



Current Challenges

■ Investment climate is uncertain and unstable:

- Loan guarantee programs heavily criticized
- Solyndra effect on loan guarantees – delays, caution, likely future cuts and reductions
- Differing results in initial public offerings:

Company	Technology	Status	IPO Price	September 2011 Price	November 11, 2011 Price
Codexis	Cellulosic ethanol (partnership with Shell)	IPO 2010	\$13.00	\$5.03	\$5.09
Amyris	Genetically modified yeast to biofuels	IPO 2010	\$17.00	\$19.94	\$12.50
Gevo	Isobutanol developer	IPO 2011	\$15.00	\$6.81	\$7.62
Solazyme	Algae	IPO 2011	\$18.00	\$9.71	\$10.47
KiOR	Hydrocarbons from renewable sources	IPO 2011	\$15.00	\$17.90	\$16.40
PetroAlgae	Algae developer	Form S-1 filed			
Myriant	Specialty chemicals	Form S-1 filed			
Ceres	Energy crop developer	Form S-1 filed			
Genomatica	Specialty chemicals	Form S-1 filed			
Mascoma	Enzymatic cellulosic ethanol	Form S-1 filed			
Elevance Renewable Sciences	Specialty chemicals	Form S-1 filed			
Fulcrum BioEnergy	MSW to biofuels	Form S-1 filed			



**Marathon
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Thank you

